Plate 7 Potential Nuna wellsite #2.

Plate 8 Low shrubby vegetation at potential Nuna wellsite #2.

Plate 9 Low shrubby vegetation at potential Nuna wellsite #2.

Plate 10 Potential Nuna wellsite #2

Plate 11 Potential Nuna wellsite #2.

Nuna #3 – 69°07.33' N – 133°17.71' W; UTM: Zone 8 572549E 7663244N

- Rolling landscape;
- Area back from lakes are high and dry, but there are very few level areas. The site will require leveling;
- Silty clay with few pebbles;
- Ground is very uneven.
- Access into area is quite difficult – hills and slopes, may require more ground access versus lakes as a lot of the lakes have very steep banks and are land locked.

Plate 12 Potential Nuna wellsite #3.

Plate 13 Potential Nuna wellsite #3.

Plate 14 Low shrubby vegetation at potential Nuna wellsite #3.

Plate 15 Low shrubby vegetation at potential Nuna wellsite #3.

Plate 16 Low shrubby vegetation at potential Nuna wellsite #3.

Plate 17 Low shrubby vegetation at potential Nuna wellsite #3.

5.0 ALTERNATIVES AND CONTINGENCIES

Petro-Canada is currently planning to drill one wellsite with the possibility of drilling a second well. The final wellsite(s) may be located within a 5 km radius of the conceptual locations, with the finalized well location(s) pending interpretation of last year's seismic data. The proposed wellsite location(s) and proposed access routes are represented in Figure 1.

Commencement of construction of the access road and drilling is contingent on the complete freezing of the active layer. In the event of delays to the freezing of the active layer, Petro-Canada will delay start-up of their operations.

6.0 CUMULATIVE EFFECTS

6.1 Environmental Aspects

Cumulative impacts may differ in nature or extent from the impacts of individual activities; while the effects of single projects may be isolated and negligible, the incremental addition of such effects in a region may accumulate to significant disturbances (MacDonald 2000, Ormerod and Watkinson 2000). The goal of cumulative effects assessment (CEA) is to identify, as best as possible, the additive contribution of a specific project to past, existent or reasonably-foreseeable projects to determine the net effect on valued ecosystem components (VECs).

Development could affect the traditional lifestyle and subsistence economy of the Inuvialuit, particularly if the distribution, abundance or productivity of plant, fish and wildlife species are altered (Kavik-Axys 2001). As such, it is important to address the environmental issues of the Inuvialuit as well as to involve the communities and other stakeholders in the consultation process to achieve insightful stewardship as described by the Inuvialuit Final Agreement (IFA). Traditional ecological knowledge (TEK), to the extent possible, has been utilized to scope VECs for assessment; describe the existing environment; predict impacts; develop mitigation; evaluate significance; and develop plans for monitoring the effectiveness of mitigations.

While preliminary guidelines for assessing cumulative effects have been developed by Kavik-Axys (2001), in cooperation with the EISC and EIRB, the ability to quantify these effects is still limited in the ISR. Although these guidelines present suites of variables that could be incorporated to assess the cumulative impacts on VECs, no specific numerical values associated with threshold criteria are included.

The assessment of Petro-Canada's proposed program uses the best available data to quantify the extent and estimate the probability of cumulative effects. Conclusions regarding cumulative effects are drawn based on a combination of quantitative findings, traditional knowledge, and extrapolations of known and projected ecological and socio-economic trends. The significance criteria applied to potential residual effects of the proposed program are defined in Section 12.0, Proposed Mitigation and Anticipated Environmental Effects, and were adapted from criteria of the Canadian Environmental Assessment

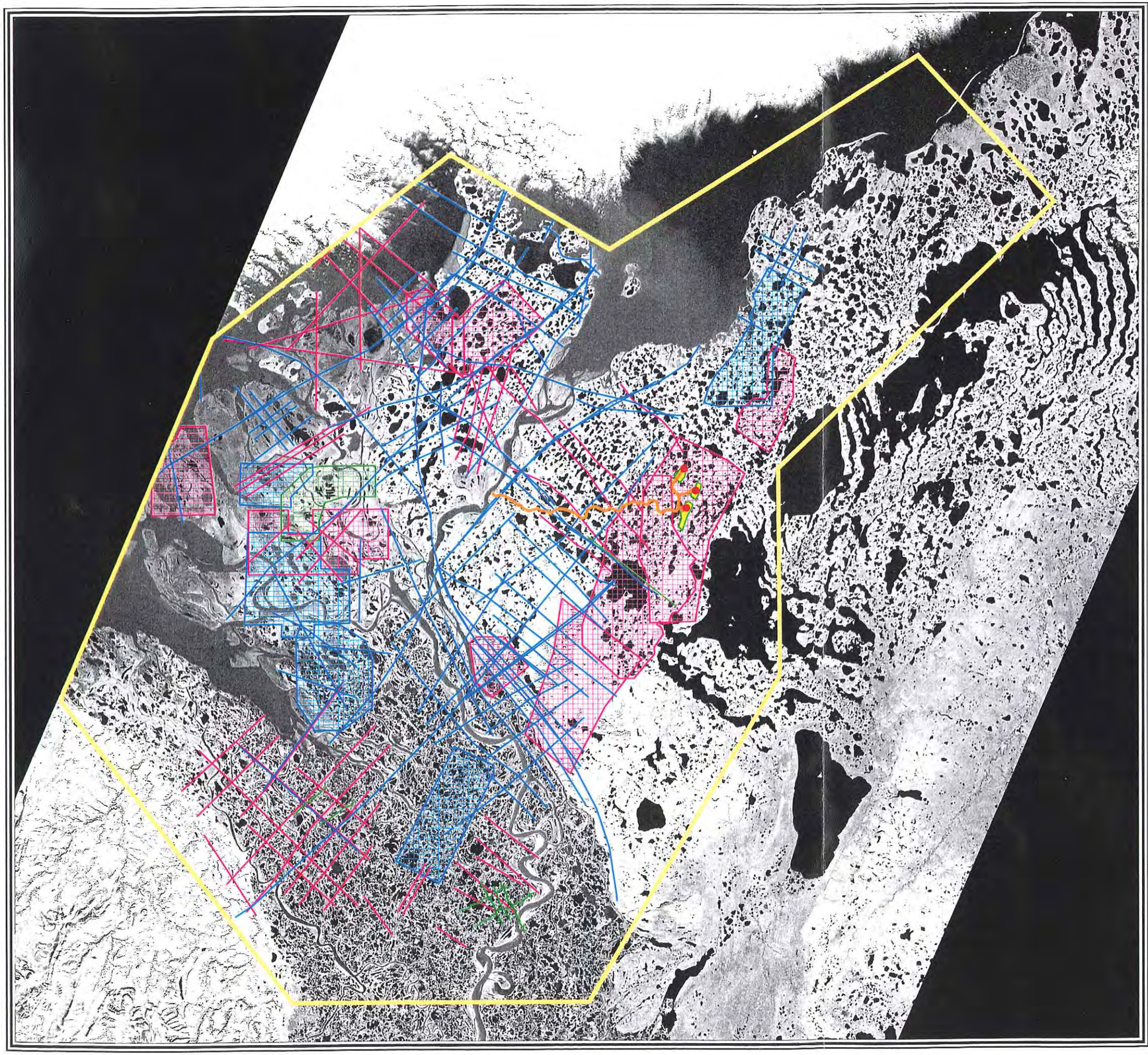
Agency (CEAWG and Axys 1999) while taking into consideration the significance criteria of the EISC (1999), as outlined in their Operating Guidelines and Procedures.

The CEA area was delineated by lease holdings (Figure 2), which encompass most of the significant past, current and imminent development activities spanning the areas required by populations of wide ranging species.

The temporal boundary was selected by considering: past projects and activities that may continue to exert residual effects on identified VECs; current projects and activities that are affecting identified VECs; and reasonably-foreseeable future projects and activities that are anticipated to affect identified VECs.

Wildlife, wildlife habitat and wildlife harvesting have been identified as primary areas of concern by communities (Kavik-Axys 2001). To assess potential impacts to habitat, mapping tools were used to quantify the habitat available to wildlife and the habitat potentially impacted by the proposed project in combination with other projects and disturbances. Where habitat availability is not quantified, density estimates, wildlife distributions and population trends are used to estimate the probability of the project interacting with a given VEC (refer to Section 12.3.5 and Appendix D).

Figure 2
Seismic Activities within the Regional Study Area for the Past 3 Years
Mackenzie Delta, NWT



Legend

- Proposed Wells
- Access Roads
- Nuna Prospects
- Regional Study Area

2D Seismic
- 2001 - 2002
- 2000 - 2001
- 1999 - 2000

3D Seismic
- 2001 - 2002
- 2000 - 2001
- 1999 - 2000

10 0 10 20 30 40 50 60 Kilometers

N

Project: 5292-02
Background: Lansdat TM Panchromatic Imagery, 31 August 2000
Cartographer: H Wong
Date: July 2002
Revision: 0

Inuvialuit Environmental & Geotechnical Inc.

6.1.1 *Aquatic Resources*

Water moving through the Mackenzie watershed transports sediments and nutrients, as well as contaminants or other materials introduced by human activity. Chemicals released to the watershed, such as nutrients or toxicants, may move downstream, transferring effects to different environments and potentially increasing in volume and concentration with additional inputs. Physical alterations of water flow or storage may change the volume of water delivered to the watershed, in turn affecting sediment, nutrient, and contaminant loads and concentrations, and altering erosion and flooding regimes. Water drawdown in lakes and other waterbodies may reduce limited fish overwintering habitat and alter flow patterns.

With the implementation of mitigation measures (Section 12.0), Petro-Canada's proposed activities are unlikely to result in the release of contaminants to the environment, and therefore the possibility of contributing to the accumulation of contaminants in the water system is low.

Overwintering habitat is considered a limiting life history component for freshwater and anadromous fish in the western Arctic (Moulton and George 2000, Gallaway and Fechhelm 2000). Water drawdown as a result of water withdrawal may reduce overwintering fish habitat, potentially affecting resident fish populations. However, lake volume calculations completed for withdrawal sources (Appendix A) and mitigation measures (Section 12.0) implemented by Petro-Canada will minimize impacts on overwintering fish habitat. In combination with the low density of other activities involved in water withdrawal throughout the region, cumulative impacts to fish overwintering habitat are considered negligible.

6.1.2 *Vegetation*

The direct project footprints of recent exploratory work in the ISR (2D & 3D seismic, drilling pads, and access roads) on different vegetation or landcover classes (IEG 2002 and Appendix D) is shown in Table 5 and on Figure 2. Potential total cumulative footprints are also presented for each landcover class. The footprint however, is not necessarily a reflection of lasting project impacts. A seismic line used in the winter of 1999 on the tundra may have no lasting impacts, while a line used recently in a forested area may have a discernible impact. Calculating cumulative impacts based on total project footprints, not on discernible impact, is therefore very conservative. These calculations are also based on proposed programs, not completed programs. What is completed on a program, or the 'as-built', is often less than what had been proposed. Using proposed program areas for these calculations is also therefore very conservative.

The footprint contributed by the project includes the proposed access route and two drilling locations. Of the two south locations potentially drilled (Nuna 2 and Nuna 3), Nuna 2 was selected for calculations since it included a longer access route and therefore represented a more conservative estimation. Drilling location footprints included a 200 m x 260 m area, representing the drill pad and associated facilities, and

allows for reconfiguration of the typical wellsite layout (Drawing 1) in that the entire footprint area has been assessed. Access route footprint to both drilling locations included a 20 m road width.

TABLE 5
ESTIMATE OF THE CUMULATIVE FOOTPRINT ON LANDCOVER CLASSES AS A RESULT OF RECENT EXPLORATION ACTIVITY

	Season				% Potential Disturbance	
	1999-2000[1]	2000-2001[1]	2001-2002			
Landcover Class	Footprint (ha)	Footprint (ha)	Footprint (ha)	Total of Seasons (ha)	% Cumulative Footprint in Region[2]	% Proposed Project Contribution
Graminoid	190.7	595.9	936.5	1723.1	2.33%	0.0007%
Sedge	166.1	915.1	1546	2627.2	1.55%	0.005%
Tussock Tundra	78.0	324.0	1071.8	1473.8	1.11%	0.002%
Low Birch	83.5	700.9	1476.9	2261.3	1.20%	0.004%
Low Willow/Alder	319.4	1650.6	2689.5	4659.5	1.32%	0.006%
Tall Willow/Alder	61.9	1192.9	826.7	2081.5	1.40%	0.000%
Woodland Conifer	7.6	235.3	120.1	363.0	0.93%	0.001%
Forest Conifer	15.1	583.3	150.6	749.1	0.73%	0.000%
Other Terrestrial	41.1	329.2	541.4	911.7	1.33%	0.002%
Ice, Water & Aquatic Vegetation	215.1	2947.6	4744.7	7907.4	0.95%	0.010%
Total	**1178.5**	**9474.9**	**14104.2**	**24757.6**	1.18%	0.006%

[1] Footprint of 3D programs conducted in 99/00 and 00/01 were calculated assuming a line density of 6.2% of the aerial extent of the 3D area. Line density was calculated based on the known average density of programs conducted in 01/02.

[2] The regional study area is shown in Figure 2.

[3] This value is representative of the total potential direct footprint disturbance in the regional area, not the sum of the individual percentages above it.

The relative contribution of the proposed Petro-Canada Nuna drilling program is negligible (Table 5) with the largest proportional contribution in the 'Ice, Water & Aquatic Vegetation' landcover class (1.01%), which will be adequately protected through mitigation measures in Section 12.0 and due to the occurrence of the program during the frozen, winter season. Other proportional contributions are less than 0.006%, and therefore the proposed program does not significantly contribute to cumulative effects in the region.

6.1.3 Wildlife and Habitat

Arctic Fox (*Alopex lagopus*)

The arctic fox population is considered 'secure' in the Northwest Territories (GNWT 2000). Although community conservation plans list the priority of arctic fox research as being 'low' (TCCP 2000), and populations being highly variable from year to year, there is enough concern to warrant the identification and protection of important habitats from disruptive land uses (TCCP 2000).

The proposed program is anticipated to have a negligible to low effect on potential arctic fox denning sites, and there is a relatively low probability of impacting arctic fox (refer to Section 12.3.5). Therefore, we anticipate that the proposed program will not contribute incrementally to cumulative effects on the regional population of arctic foxes.

Caribou (*Rangifer tarandus*)

The proposed program has the potential to impact caribou through the temporary disturbance of winter forage habitat, and sensory disturbance due to the intermittent presence of humans and vehicles (Section 12.3.5). These impacts may combine with those of other activities on a local to regional/trans-boundary scale, thereby exerting cumulative pressures on the caribou population.

As the Cape Bathurst and Bluenose West caribou herds are currently secure, it is likely that disturbance effects of previous activities are low to negligible, with effects limited to relatively recent activities.

Based on habitat suitability index models (IEG 2002), the percent of winter caribou habitat removal was calculated at the local and regional level (Table 6). The direct footprint of the proposed project will encompass only 0.006% of available caribou habitat, corresponding to the potential contribution to the total cumulative disturbance of caribou habitat in the region by 0.008%. In comparison, the potential cumulative footprint of caribou habitat from programs occurring within the last three exploration seasons is approximately 1.00% in the regional study area.

TABLE 6
POTENTIAL CUMULATIVE EFFECTS TO WINTER CARIBOU HABITAT BY DIRECT FOOTPRINT OF PROPOSED PROGRAM

	Season				% Potential Disturbance	
	1999-2000*	2000-2001*	2001-2002	Total of Seasons (ha)	% Cumulative Footprint in Region	% Proposed Project Contribution
Habitat Type	Footprint (ha)	Footprint (ha)	Footprint (ha)			
Winter Caribou Habitat	608.2	4762.2	6099.5	11469.8	1.00%	0.008%
Non-Winter Caribou Habitat	570.3	4712.8	7963.8	13246.8	1.36%	0.004%
Total	1178.5	9475.0	14063.2	24716.7	**1.17%**	**0.006%**

* 3D seismic program footprints were estimated by using known 3D seismic boundaries and line densities from 2001/2002 and applying a density function derived by comparing the total area within the boundaries with the actual line areas.

The calculations are based on total cumulative project footprints. However, changes to habitat are expected to be short-term to mid-term and reversible, with negligible effects on lichen and sporadic removal of caribou browse plants. The estimation is therefore considered conservative. Given the small percentage of habitat that would be disturbed by Petro-Canada's operations under this conservative

scenario, and the implementation of mitigation measures, the magnitude of the incremental contribution to cumulative effects on caribou is anticipated to be low to negligible.

Given the implementation of mitigation measures to protect tundra vegetation, it is anticipated the program will not contribute significantly to cumulative caribou habitat alteration or loss.

Grizzly Bear (*Ursus arctos*)

The grizzly bear population of the Tuktoyaktuk Peninsula and Richards Island is considered secure (Nagy et al. 1983, GNWT 2000), and elders in Aklavik and Inuvik feel that the bear population in the Mackenzie Delta region is currently increasing (IEG 2002). Despite this potentially positive trend, the grizzly bear population in the Northwest Territories has been designated as "Special Concern" as a result of moderate threats to population, distribution and habitat due to expanding development (COSEWIC 2001). The grizzly population is currently managed under the Co-management Plan for Grizzly Bears in the Inuvialuit Settlement Region, Yukon Territory and Northwest Territories to ensure grizzlies and their habitat are protected and the harvesting rights of the Inuvialuit are preserved.

While grizzly bears have not been identified as a preferred subsistence species during past community consultations (IEG 2002), they are used traditionally by the Inuvialuit as a furbearer (AICCP, IICCP, TCCP 2000), and are also utilized commercially by sport hunting outfitters and local Hunters' and Trappers' Committees, who conduct grizzly bear hunts according to set quotas.

The grizzly bear's wide-ranging behaviour and use of diverse habitats potentially exposes them to multiple stressors of human development and human activities. The limited availability of denning habitat in the region also increases their vulnerability. In addition to Petro-Canada's proposed program, Shell plans to conduct a 3D seismic and drilling program within the range of the Richards Island/Tuktoyaktuk Peninsula grizzly population. While these programs may exert localized pressure on grizzly bear habitat or create a low magnitude of sensory disturbance, impacts at the population level are not anticipated. Given the historical low densities of grizzly bears in the program vicinity, the incremental contribution of Petro-Canada's program to impacts on the grizzly bear population and habitat availability is anticipated to be negligible. With the implementation of mitigation measures, the cumulative effect on grizzly bears in the region is expected to be low to negligible in magnitude, with no impacts foreseen at the population level.

Muskrat (*Ondara zibethicus*)

It is anticipated that program effects will be localized, temporary and will not contribute significantly to overall population reductions. Effects of programs such as pushup destruction, erosion and pollution causing habitat loss have mitigation measures in place (Refer to Section 12.3.5).

Other effects such as trapping and climate warming may play a larger part in population reductions (Simpson and Boutin 1989, Scrimgeour et al. 1994). In the Mackenzie Delta, less flooding and a possible change in muskrat habitat was reported by people in the community of Aklavik (IEG 2002). Although

muskrat populations may be reduced in an area, they have certain compensatory mechanisms, such as a quick dispersal and immigration into previously trapped or disturbed areas (Simpson and Boutin 1989).

Red Fox (*Vulpes vulpes*)

The red fox is an important furbearer within the Mackenzie Delta region (AICCP 2000, IICCP 2000, TCCP 2000). It is fairly ubiquitous throughout most of the region and has the status of the most widely distributed mammal species in the world (Nowak 1991). This is due to its generalist prey preferences, large litter size and denning characteristics (Refer to Section 11.8.1). Program related impacts to the red fox are anticipated to be minimal and short term in nature given the mitigation measures in place (refer to Section 12.3.5).

In the Mackenzie Delta region prey species such as ptarmigan may be impacted through habitat loss, but red fox have an abundance of alternate food sources to draw upon such as small mammals, berries and various other bird species. Therefore cumulative effects are expected to be negligible.

Wolf (*Canis lupus*)

The Inuvialuit use wolves traditionally as a furbearer, although their hunt is currently opportunistic (IEG 2002). Inuvialuit communities have set a general goal to maintain a healthy wolf population that can sustain an annual harvest by hunters and trappers (AICCP, IICCP, TCCP 2000), without jeopardizing their ability to harvest caribou (Clarkson and Liepins 1989). Better estimates of population size, carrying capacity and sustainable yield are needed to further these management goals.

The proposed program has a low probability of encountering an individual wolf, with anticipated potential impacts being low to negligible (refer to Section 12.3.5). As the Northwest Territories wolf population and its habitat are currently secure (GNWT 2000), it can be assumed that any disturbance effects from previous activities are no longer exerting an effect. The large area occupied by wolves throughout the year results in the potential exposure to multiple human activities, and therefore industrial developments that affect wolves may generate local and regional disturbances (Walton et al. 2001). The harvest of wolves can be high in open tundra areas, particularly around communities and when migratory caribou are wintering nearby (Hayes and Gunson 1995). Clarkson and Liepins (1989, 1991) also noted that the majority of wolf mortalities within their study area occurred from hunting. No other reasonably foreseeable activities that may potentially affect wolves have been identified as upcoming in the regional study area. While the proposed program has the potential to contribute to cumulative impacts on wolves, it is anticipated that any such effects will be low to negligible, particularly when compared to harvest mortalities.

Wolverine (*Gulo gulo*)

Impacts from the proposed program on wolverine populations are expected to be negligible (Refer to Section 12.3.5). However, cumulatively the combined effect of programs in the Husky Lakes region may potentially alter wolverine distribution and movements.

The increased activity associated with programs may cause wolverines to move away from the development area, limiting their range and traditional habitat use (Petersen 1997). However, the extent of disturbance, seasonality and length of programs affecting wolverines is unknown (Petersen 1997).

In the NWT, the wolverine populations are known to be genetically distinct and represent individual local populations (Wilson et al. 2000). To preserve genetic diversity and gene flow among populations, dispersal corridors and large undisturbed areas must be maintained in local population areas (Wilson et al. 2000). However, within the program area data on wolverine population size, denning locations and movements do not exist. However, while it is difficult to quantify a threshold of disturbance, the contribution of the program to regional disturbances is considered negligible.

Migratory Birds

Many species of waterfowl, shorebirds and raptors stage, nest, moult and feed in the vicinity of the proposed program during the spring, summer and fall (Table 17). Given the international migratory nature of many shorebirds and waterfowl, effects such as habitat loss in other areas of a species range, hunting, pollution, predation, nesting success, stochastic events and climate change contribute to the erratic population fluctuations many migratory species exhibit in regions of the north (Troy 2000, Axys 2001, Morrison 2001).

The potential for exploration-related regional cumulative effects on migratory birds primarily results from habitat loss and disturbance. Habitat loss and disturbance reduces food accessibility leading to movements of birds to other sites and hence, increased density and reduced carrying capacity of the habitat (Goss-Custard et al. 1995, Hill et al. 1997).

Given the small size and temporary nature of the ice pad used for the well site, impacts to waterfowl, shorebirds and raptors are expected to be negligible. Temporary displacement may result due to prolonged melting of the pad surface, but with the implementation of mitigation measures (Refer to Section 12.3.5), disturbance to habitat is not anticipated. Given that impacts are expected to be negligible and short-term, it is expected the proposed program will not contribute incrementally to cumulative effects on the bird population.

Ptarmigan (*Lagopus* spp.)

Habitat loss can result in a decline of the number of willow ptarmigan (*Lagopus lagopus*) a local region is able to support. This may result in increased densities in other regions of suitable habitat and a possible reduction in the carrying capacity of the landscape (Hill et al. 1997). Based on habitat suitability index models (IEG 2002), the distribution of willow ptarmigan was inferred and the percent of habitat removal was calculated at the local and regional level. These results were then compared to the potential cumulative loss of willow ptarmigan habitat from past programs. The direct footprint of the proposed project will encompass 106 ha of available willow ptarmigan habitat, corresponding to the potential contribution to the total cumulative disturbance of ptarmigan habitat in the region by 0.006%. In comparison, the potential cumulative removal of willow ptarmigan habitat from programs occurring within the last three exploration seasons is approximately 1.10% in the regional study area (

Table 7). While a threshold for habitat loss has yet to be quantified for willow ptarmigan, some models for other landbird species indicate that population viability is ensured if 20% of breeding habitat remains (Axys 2001).

TABLE 7
POTENTIAL CUMULATIVE EFFECTS TO PTARMIGAN HABITAT BY DIRECT FOOTPRINT OF PROPOSED PROGRAM

	Season				% Potential Disturbance	
Habitat Type	1999-2000 Footprint (ha)	2000-2001 Footprint (ha)	2001-2002 Footprint (ha)	Total of Seasons (ha)	% Cumulative Footprint in Region	% Proposed Project Contribution
Ptarmigan Habitat	656.0	6967.5	10459.0	18082.4	1.10%	0.006%
Non-Ptarmigan Habitat	522.5	2507.4	4234.1	7264.0	1.54%	0.005%
Total	1178.5	9475.0	14693.0	25346.5	**1.20%**	**0.006%**

* 3D seismic program footprints were estimated by using known 3D seismic boundaries and line densities from 2001/2002 and applying a density function derived by comparing the total area within the boundaries with the actual line areas.

6.2 Socio-Economic

Peripheral, longer-lasting benefits may be realized through economic diversification complementary to oil and gas development (i.e. travel agents, services, hotels, restaurants, etc.), rather than directly through exploration (Shrimpton 2000). While Petro-Canada's project may incrementally contribute to these longer-term effects, most impacts will be short term and will be related to seasonal employment and income, the influx of non-resident workers and potential strains on the community infrastructure. The drilling project is unlikely to result in long-term cumulative changes, with such longer-term change occurring when development moves from the exploration to the production phase.

7.0 LOCATION

Petro-Canada's Nuna Winter 2002/2003 drilling program is located on either Crown and/or Inuvialuit land. The Nuna #1 drilling location will be within a 5 km radius of 69°09.57'N – 133°20.91'W; Zone 8 571256E 7666553N. The Nuna #2 drilling location is within a 5 km radius of 69°05.28'N – 133°20.42' W; Zone 8 571812E 7660991N. The Nuna #3 drilling location will be within a 5 km radius of 69°07.33' N – 133°17.71' W; Zone 8 572549E 7663244N. The wellsite locations and associated access routes are indicated in Figure 1, with the wellsite(s) located within the indicated prospect areas.

8.0 TRADITIONAL AND OTHER LAND USES

The proposed project area is situated within the traditional harvesting region of the Tuktoyaktuk peoples. There are thirteen Special Management Areas found on or near the proposed project area. The proposed project falls within the Aklavik, Inuvik, and Tuktoyaktuk Community Conservation Planning Areas on lands designated Management Categories B and C, and adjacent to lands designated Management Category D. These categories are defined as:

> Category B: Lands and waters where there are cultural or renewable resources of some significance and sensitivity, where terms and conditions associated with permits and leases shall assure conservation of these resources.
>
> Category C: Lands and waters where cultural or renewable resources are of significance and sensitivity at particular times of year, and are to be managed so as to guarantee the conservation of these resources.
>
> Category D: Lands and waters where cultural or renewable resources are of significance and sensitivity throughout the year, and are to be managed so as to guarantee the conservation of these resources.

The location of these areas is outlined in Table 8, and their significance is discussed below. Traditional harvesting areas and Special management areas within or near the vicinity of the project area are shown in Figure and.Figure .

TABLE 8
SPECIAL MANAGEMENT AREAS SURROUNDING OR NEAR THE PROPOSED PROGRAM AREA

Area Designation	Name	Area Description*	Location with Respect to Proposed Project
704C	Fish Lakes and Rivers	Rivers and lakes along the shoreline west of Tuktoyaktuk, inland to their headwaters, including Parsons and Yaya Lakes.	Surrounds proposed project.
705D	Husky Lakes	South and east of Tuktoyaktuk, and includes the bays, islands, and shorelines of the Husky Lakes beginning at Sitidgi Creek and extending northeastward to Liverpool Bay.	Adjacent to east boundary of proposed project.
302C	Spring Caribou Harvesting Areas	Surrounding Husky Lakes, east of Cape Bathurst, just west of Mason River, extending south from the Mackenzie River to Sitidgi Lake, with the Tuktoyaktuk Peninsula at the northern boundary.	Surrounds proposed project.
303B	Spring Moose Harvesting Areas	South boundary at Sitidgi Lake, northward to the southern end of Husky Lakes, east to Kugaluk River.	Adjacent to southeast boundary of proposed project.

Area Designation	Name	Area Description*	Location with Respect to Proposed Project
304C	Spring Goose Harvesting Areas	Islands in the western portion of the Mackenzie River Estuary, from eastern Richards Island along the coast, including all of the Tuktoyaktuk Peninsula, to Mason River Estuary, and the Husky Lakes. Other areas include sections of the Miner River, Anderson River, and Gossley Lakes.	Adjacent to southeast boundary of proposed project.
305C	Spring Fishing Areas	Various sites within the Tuktoyaktuk Planning Area.	Adjacent to southeast boundary of proposed project.
307C	Summer Fishing Areas	Various sites within the Tuktoyaktuk Planning Area.	Adjacent to southeast boundary of proposed project.
310C	Fall Fishing Areas	Various sites within the Tuktoyaktuk Planning Area.	Adjacent to southeast boundary of proposed project.
314C	Winter Wolverine Harvesting Areas	Husky Lakes, Finger Lakes, and area southeast of Husky Lakes.	Surrounds proposed project.
315C	Winter Caribou Harvesting Areas	Richards Island south to the northern part of Sitidgi Lake; Anderson River to the mouth of the Mason River, including the Tuktoyaktuk Peninsula.	Surrounds proposed project.
316C	Winter Fishing Areas	Various sites within the Tuktoyaktuk Planning Area, including Liverpool Bay.	Surrounds proposed project.
322C	Critical Grizzly Bear Denning Areas	Coastal areas, starting at the western portion of Richards Island, east to Fingers Area, northeast to include the Tuktoyaktuk Peninsula. A second area from the mouth of the Anderson River along the coast of Wood Bay, to include the mouth of the Horton River, south along the Horton River, southwest to include the main section of the Anderson River.	Surrounds proposed project.
701B	Bluenose-West Caribou Herd Winter Range	Starting at the southern ISR boundary, up to Tununuk, northeast to include the western portion of the Tuktoyaktuk Peninsula, southeast to include the Anderson River, and south to the ISR border. The winter range of the herd also extends into the Gwich'in Settlement Area and the Sahtu Settlement Area.	Surrounds proposed project.

Adapted from AICCP, IICCP, and TCCP 2000

The Fish Lakes and Rivers area (Site No. 704C) is within the proposed project area (IICCP and TCCP 2000). The Fish Lakes and Rivers are spawning and overwintering habitats for fish, and land use activities in this area may affect these habitats, although more along the eastern portion of the region.

The Husky Lakes area (Site No. 705D) is southeast of the proposed project (AICCP, IICCP, and TCCP 2000). Husky Lakes have many functions and are important for year-round subsistence berry picking, hunting, and trapping, as well as recreation (e.g., sport fishing, camping, travel). Approximately 51 cabins and 30 tenting spots are located throughout the area (Hoyt 2001) but the heaviest concentrations of cabins in the Husky Lakes region are found in the narrows northwest of Five Hundred Lakes and to a lesser extent around Whale Point and Portage Point at the southern limit of Husky Lakes.

The Husky Lakes Study (Hoyt 2001) suggests that the area is under pressure from subsistence harvesting and economic development and local people are concerned about conflict between traditional uses and other land uses and the deterioration of the "specialness" of Husky Lakes. There is concern that land use

activities may affect these traditional ways of life. The region is vital to the community as a place where "families... [can] spend time together and ... pass on the skills and culture of the Inuvialuit" (Hoyt 2001, p. 3).

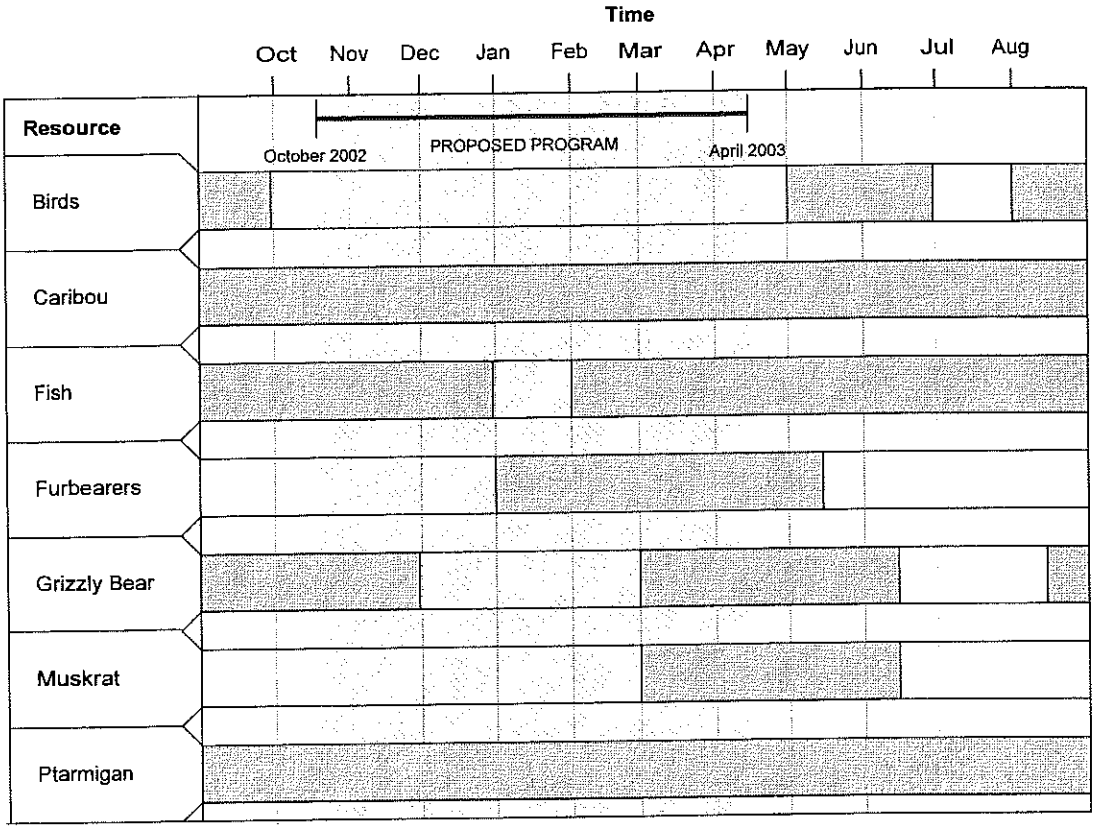
Husky Lakes are spawning habitat for Pacific herring and lake trout. Land use activities may affect spawning habitat. Beluga whales and seals have also been found to use the Husky Lakes. Studies conducted by the INAC (1976) suggest limited muskrat trapping around Husky Lakes, moose harvesting to the west of Husky Lakes and fish harvesting in the upper parts of Husky Lakes concentrated at Saunuktok, Zieman Cabin and Stanley Cabin (TCCP 2000, ISL 1977, MFRL 1976).

The proposed project area is known to offer year-round and seasonal habitat for wildlife. The proposed project is in a critical grizzly bear denning site (Site No. 322C)(TCCP 2000), and is part of Grizzly Bear Management Area C2-4G Tuktoyaktuk West (AICCP, IICCP, and TCCP 2000). Grizzly bears are important furbearers (AICCP, IICCP, and TCCP 2000). There is concern that grizzly bear dens will be disturbed by oil and gas activity (TCCP 2000). The proposed project is also part of the South Beaufort Polar Bear Management Area (AICCP, IICCP, and TCCP 2000). The timing of the project lies outside season of inland use by the polar bear so opportunities for polar bear – human conflict are limited.

This area is also part of the Cape Bathurst and Bluenose-West Caribou Herd ranges (AICCP, IICCP, and TCCP 2000). In particular, the proposed project area has been recognized as part of the Cape Bathurst Caribou Herd Winter Range (Site 701B)(AICCP, IICCP, and TCCP 2000). Caribou is an important subsistence species (AICCP, IICCP, and TCCP 2000).

Traditional harvesting ranges for many wildlife species coincides with the proposed project area. Of particular importance are the spring goose (Site No. 304C), spring moose (Site 303B), spring and winter caribou (Site Nos. 302C and 315C), winter wolverine (Site No. 314C) and year-round fish harvesting areas (Site Nos. 305C, 307C, 310C, and 316C) (TCCP 2000). These have all been identified as key subsistence species (TCCP 2000). The proposed project is also in the Tuktoyaktuk Group Trapping Area (TCCP 2000). Table 9 shows species that may be harvested within the vicinity of the proposed program area and harvesting timelines.

TABLE 9
HARVESTING TIMELINES FOR SPECIES FOUND WITHIN THE VICINITY OF THE PROGRAM AREA



Adapted from AICCP, IICCP, and TCCP 2000

Currently, the Inuvialuit Land Administration (ILA) is working on a Husky Lakes management plan, which will include information that is pertinent to oil and gas activities in the area. Petro-Canada will incorporate applicable information provided by this report when it is made available.

Several other locations, within the project area, have been identified as potential recreation areas (Site Nos. 704C and 705D) (AICCP, IICCP, and TCCP 2000). Recreational activity may disturb wildlife or degrade its habitat (AICCP, IICCP, and TCCP 2000).

Petro-Canada's project area accommodates winter guided sport hunts, fishing and canoeing offered by operators departing from Tuktoyaktuk and Inuvik (NWT Arctic Tourism 1998). Northwest Territories Hunting Regulations for non-land claim beneficiaries (RWED 2002) include permitted hunting seasons for caribou, grizzly bear, wolf, and wolverine in the proposed program area. Some impacts to permitted hunting of these species is possible.

Impacts cannot be entirely avoided but Petro-Canada is committed to working with local Hunters and Trappers Committees and nearby cabin owners in order to make individuals aware of ongoing exploration activities that may impact their traditional activities. Petro-Canada will make every effort to ensure mitigation measures are implemented and monitored to minimize disturbance to wildlife and habitat, and traditional use.